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10/806,359	03/23/2004	Patrick M.Y. Waye	P24304	3976

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EXAMINER	
NGUYEN, HAI V	
ART UNIT	**PAPER NUMBER**
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/806,359	WAYE, PATRICK M.Y.
	Examiner	**Art Unit**
	HAI V. NGUYEN	2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _03_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _12 August 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-23_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-23_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _12 August 2008_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _06/16/2008_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the communication received on 12 August 2008.

2. Claims 1-23 are presented for examination.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 16, 20 received on 12 August 2008 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Graham** US patent # **5,697,067** in view of **Waye** et al. US patent # **7,024,157 B2**.

6. As to claim 1, Graham discloses a radio frequency communication system *(Figure 1)* for communicating signals, said system comprising:

a radiating transmission line *(Fig. 1, element 12)* having a first end *(Fig. 1, element 29)* and a second end *(Fig. 2, element terminators 13)*; a base station *(Fig. 1, element 24)* coupled to the first end, said base station comprising a base receiver *(Fig. 1, element 26)* for receiving a first communication signal *(Fig. 1, a first audio signal As1)* at a first frequency *(Fig. 1, frequency element F1)* from the first end;

at least two amplification units *(Fig. 1, elements 30)* coupled to said transmission line at

periodic locations for amplifying the first communication signal at the first frequency from previous amplification units in an upstream direction towards the first end *(toward to base receiver 26 path)*, and

However Graham does not explicitly disclose said at least two amplification units having degradation detection units for detecting a degradation in the communication system between the at least two amplification units; and wherein upon detection of a degradation in the communication system between any two amplification units, the amplification units detecting the degradation change the frequency of the first communication signal along the radiating transmission line between the two amplification units having detected the degradation from the first frequency to a predetermined first fault frequency to facilitate overcoming the degradation in the communication system.

Waye discloses said at least two amplification units *(the regeneration amplifiers 110 are spaced along in the communication system 10, such as every 500 to 10,000 meters, col. 6, lines 50-61)* having degradation detection units *(Fig. 2, data processor element 140 or tracking units element 170, col. 7, line 32—col. 33, line 18)* for detecting a degradation *(error detection)* in the communication system between the at least two amplification units; and wherein upon detection of a degradation in the communication system between any two amplification units, the amplification units detecting the degradation change the frequency of the first communication signal along the radiating transmission line between the two amplification units having detected the degradation from the first frequency to a predetermined first fault frequency *(a regenerated radio*

frequency data signal, Abstract, Figure 2, col. 7, line 4 – col. 8, line 46) to facilitate overcoming the degradation in the communication system.

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time of the invention was made to have incorporated Waye's teachings of detecting errors in data signals traveling along radiating transmission line with the teachings of Graham, for the purpose of *correcting errors in the recovered data signals (Waye, col. 7, lines 32-40).*

7. As to claim 2, Graham-Waye discloses the radio frequency communication system wherein, the first fault frequency is different from any other frequency in the communication system between the two amplification units having detected the degradation *(Waye, Fig. 2, the generated frequency F1 is different from the F2, F3, F4)*.

8. As to claim 3, Graham-Waye discloses wherein the first fault frequency is selected to facilitate radiation of the first communication signal from a first portion of the radiating transmission line located downstream of the degradation to a second portion of the radiating transmission line located upstream of the degradation *(Waye, Figs. 1-4)*.

9. As to claim 4, Graham-Waye discloses each amplification unit *(Waye, Fig. 2, element 110)* comprises:

a downstream connection for connecting a length of the transmission line in a downstream direction towards the second end of the transmission line, and, an upstream connection for connecting a length of the transmission line in the upstream direction towards the first end *(Waye, Figs. 1-4)*; and

wherein, upon detection of a degradation in the length of the transmission line at the

downstream connection, the amplification unit *(Waye, Figs. 1-4, element 110)* commences to receive the first communication signal at the predetermined first fault frequency and upon no detection of a degradation in the length of the transmission line at the upstream connection, the amplification unit transmits the first communication signal at the first frequency *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*.

10. As to claim 5, Graham-Waye discloses each amplification unit comprises:

a downstream connection for connecting a length of the transmission line in a downstream direction towards the second end of the transmission line, and, an upstream connection for connecting a length of the transmission line in the upstream direction towards the first end *(Graham, Figure 1)*; and

wherein upon detection of a degradation in the length of the transmission line at the upstream connection, the amplification unit commences to transmit the first communication signal at the predetermined first fault frequency and increases a power level of the first communication signal to facilitate radiation of the first communication signal from a first portion of the radiating transmission line downstream of the degradation to be received by a second portion of the radiating transmission line upstream of the degradation *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*.

11. As to claim 6, Graham-Waye discloses said base station *(Graham, Figure 1, element 24)* comprises a base transmitter *(Graham, Figure 1, element 28)* for transmitting a second communication signal *(Graham, Figure 1, element As2)* at a second frequency *(Graham, Figure 1, element F2)* into the first end *(Graham, Figure 1, element 13)*; wherein said at least two amplification units *((Graham, Figure 1, elements*

30) coupled to said transmission line at periodic locations *(spaced locations)* amplify the second communication signal at the second frequency from previous amplification units in a downstream direction towards the second end of the transmission line *(Graham, Figures 1, 2)*;

wherein upon detection of a degradation in the communication system between any two amplification units, the amplification units detecting the degradation change the frequency of the second communication signal from the second frequency to a predetermined second fault frequency *(Waye, regenerated radio frequency element F2)* along the radiating transmission line between the two amplification units having detected the degradation to overcome *(to correct the error)* the degradation in the communication system *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*; and

wherein the second fault frequency differs from any other frequency in the communication system *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*.

12. As to claim 7, Graham-Waye discloses the first fault frequency is lower than the first frequency and the second fault frequency is lower than the second frequency *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*.

13. As to claim 8, Graham-Waye discloses the second fault frequency is selected to facilitate radiation of the second communication signal from a first portion of the radiating transmission line located upstream of the degradation to a second portion of the radiating transmission line located downstream of the degradation *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*.

14. As to claim 9, Graham-Waye discloses the degradation detection units detect a degradation in the communication system by detecting a decreased power level in the first communication signal for a predetermined time period *(Waye, Figs. 1-4, col. 7, lines 19-40)*.

15. As to claim 10, Graham-Waye discloses wherein the degradation detection units detect a degradation in the communication system by detecting a decreased power level in either the first communication signal or the second communication signal for a predetermined time period *(Waye, Figs. 1-4, col. 7, lines 19-40)*.

16. As to claim 11, Graham-Waye discloses wherein each amplification unit comprises:

a downstream degradation detection unit *(Waye, Figs. 1-2, elements 140, 170)* for detecting a degradation in the length of the transmission line at the downstream connection by detecting a decreased power level of a DC current received from the length of the transmission line connected in the downstream connection for a predetermined period of time *(Waye, Figs. 1-4, col. 7, line 19 – col. 8, line 37)*; and wherein after the predetermined time period, the downstream degradation detection unit sends a switch signal to a fault switch *(Waye, Fig. 2, element 170, col. 11, lines 27-55)* causing the amplification unit to commence to receive the first communication signal at the predetermined first fault frequency *(Waye, Fig. 2, element 170, col. 11, lines 27-55)*.

17. As to claim 12, Graham-Waye discloses, wherein the predetermined first fault frequency differs from any other frequency in the communication system *(Waye, Fig. 2, the generated frequency F1 is different from the F2, F3, F4)*; and

wherein the degradation detection unit detects degradation in the communication system by detecting transmission of any communication signal at the predetermined first fault frequency *(Waye, Fig. 2, element 170, col. 11, lines 27-55)*.

18. As to claim 13, Graham-Waye discloses a branching radiating transmission line having a first end, a second end and a branching unit for electrically coupling the first end of the branching radiating transmission line to the radiating transmission line, such that the first communication signals may pass to and from the branching radiating transmission line to the radiating transmission line either at the first frequency of the first fault frequency *(Waye, Figs. 1, 2, col. 7, line 19 – col. 8, line 67; col. 11, lines 27-55)*.

19. As to claim 14, Graham-Waye discloses wherein a substantial part of the radiating transmission line is located below ground and the second end of the radiating transmission line is located remotely from the first end of the radiating transmission line *(Graham, Figures 1, 2)*.

20. As to claim 15, Graham-Waye discloses wherein the base station is above ground and the communication system is used to facilitate communication in a mine *(Graham, Figures 1, 2)*.

21. As to claim 16, Graham discloses in a radio frequency communication system for communicating communication signals on a radiating transmission line, said radiating transmission line having a first end *(Graham, Figure 1, element 29)* and a second end *(Graham, Figure 1, element 13)* located remotely from the first end, said first end coupled to a base station *(Graham, Figure 1, element 24)* comprising a base receiver *(Graham, Figure 1, element 26)* for receiving a first communication signal *(Graham,*

Figure 1, element As1) at a first frequency *(Graham, Figure 1, element F1)* from the first end, an amplification unit *(Graham, Figure 1, element 30)* for facilitating communication of the communication signals, said amplification unit comprising:

a downstream connection *(Graham, Figure 1, downstream from base station to termination unit)* for connecting a length of the transmission line in a downstream direction towards the second end of the transmission line; an upstream connection *(Graham, Figure 1, upstream from termination unit to base station)* for connecting a length of the transmission line in an upstream direction towards the first end;

an amplifier *(Graham, Figure 1, element 90)* for amplifying the first communication signal in a direction towards the first end;

However Graham does not explicitly disclose a degradation detection unit for detecting a degradation in the communication signal in the length of the transmission line at the upstream connection; wherein upon detection of a degradation in the length of the transmission line in the upstream connection, the amplification unit commences to amplify and transmit the first communication signal at a predetermined first fault frequency and upon no detection of a degradation in the length of the transmission line at the downstream connection, the amplification unit continues to receive the first communication signal at the downstream connection at the first frequency.

Waye discloses said a degradation detection unit *(Waye, Figure 2, elements 140, 170)* for detecting a degradation *(an error)* in the communication signal in the length of the transmission line at the upstream connection *(Waye, Figure 2, toward receive path to head end unit 12)*; wherein upon detection of a degradation in the length of the

transmission line in the upstream connection, the amplification unit *(Waye, Figures 1, 2, element 110)* commences to amplify and transmit the first communication signal at a predetermined first fault frequency *(a regenerated radio frequency data signal, Abstract, Figure 2, col. 7, line 4 – col. 8, line 46)* and upon no detection of a degradation in the length of the transmission line at the downstream connection, the amplification unit continues to receive the first communication signal at the downstream connection at the first frequency *(Waye, Abstract, Figures 1, 2)*.

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time of the invention was made to have incorporated Waye's teachings of detecting the co-axial loss of cable with the teachings of Graham, for the purpose of *correcting errors in the recovered data signals (Waye, col. 7, lines 32-40).*

22. As to claim 17, Graham-Waye discloses wherein the degradation detection unit detects degradations in the length of the transmission line at the downstream connection; and wherein upon detection of a degradation in the downstream connection, the amplification unit commences to receive the first communication signal at the downstream connection at the predetermined first fault frequency *(Waye, Abstract, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

23. As to claim 18, Graham-Waye discloses wherein the first fault frequency is different from any other frequency in the communication system along the length of the transmission line over which the degradation has been detected *(Waye, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

24. As to claim 19, Graham-Waye discloses wherein the first fault frequency is selected to facilitate radiation of the first communication signal from a first portion of the radiating transmission line, located between the amplification unit and the location of the degradation, and, a second portion of the radiating transmission line, located between the degradation and another amplification unit in the communication system *(Waye, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

25. As to claim 20, Graham discloses a method for communicating communication signals utilizing a radiating transmission line *(Graham, Figure 1, element 12)* having at least two amplification units *(Graham, Figure 1, element 30)* coupled to the transmission line at periodic locations *(spaced locations)* for amplifying communication signals along the radiating transmission line.

However, Graham does not explicitly disclose detecting a degradation in the communication signal along a link of the radiation transmission line between any two amplification units coupled to the radiating transmission line and at each of the two amplification units detecting a degradation in the communication system, altering a frequency of the communication signal along the length of the transmission line between the two amplification units having detected the degradation from a first frequency, used when no degradation is detected, to a predetermined first fault frequency different from the first frequency.

Waye discloses detecting a degradation *(an error)* in the communication signal along a link of the radiation transmission line *(Graham, Figure 1, element 12)* between any two amplification units coupled to the radiating transmission line *(Waye, Figures 1,*

2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63); and at each of the two amplification units detecting a degradation in the communication system, altering a frequency *(Waye, Figure 1, element F1)* of the communication signal along the length of the transmission line between the two amplification units having detected the degradation from a first frequency, used when no degradation is detected, to a predetermined first fault frequency *(a generated radio frequency F1)* different from the first frequency *(Waye, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time of the invention was made to have incorporated Waye's teachings of detecting the co-axial loss of cable with the teachings of Graham, for the purpose of *correcting errors in the recovered data signals (Waye, col. 7, lines 32-40).*

26. As to claim 21, Graham-Waye discloses wherein the first fault frequency is selected to facilitate radiation of the communication signals from a first portion of the length of the transmission line downstream of the degradation to a second portion of the length of the transmission line upstream of the degradation unit *(Waye, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

27. As to claim 22, Graham-Waye discloses a first downstream filter *(Graham, Figs. 2, 3, element 52B)* for filtering communication signals at the first frequency;

a first downstream fault filter *(Graham, Figs. 2, 3, element 52A)* for filtering communication signals at the first fault frequency;

a switch *(Graham, Figs. 2, 3, element 51)* for switching the first communication signals

to the first downstream filter; and

wherein upon the degradation unit *(Waye, Fig. 2, elements 140, 170)* detecting a degradation *(an error)* the first communication signal in the length of the transmission at the downstream connection, the switch switches the first communication signal from the first downstream filter to the first downstream fault filter *(Waye, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

28. As to claim 23, Graham-Waye discloses a first upstream filter *(Graham, Figures 2, 4, element 60)* for filtering communication signals at the first frequency *(Graham, Figures 2, 4, element F2)*;

a first upstream fault filter *(Graham, Figures 2, 4, element 62A)* for filtering communication signals at the first fault frequency;

a switch *(Graham, Figures 2, 4, element 61)* for switching the first communication signals to the first upstream filter or the first upstream fault filter; and

wherein upon detection of a degradation *(an error)* in the first communication signal in the length of the transmission line at the upstream connection, the switch switches the first communication signal after amplification at the first upstream fault frequency from the first upstream filter to the first upstream fault filter *(Waye, Figures 1, 2, col. 7, line 4 – col. 8, line 46; col. 10, line 64 – col. 11, line 63)*.

29. Further references of interest are cited on Form PTO-892, which is an attachment to this action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAI V. NGUYEN whose telephone number is (571)272-3901. The examiner can normally be reached on 6:00-3:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hai V. Nguyen/
Examiner, Art Unit 2618